Lesson Element
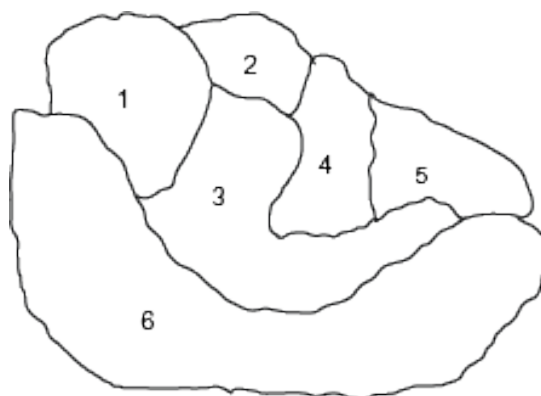
Thinking Abstractly

Activity 1

Colour the map above, making sure that countries that share a border are not the same colour. You should also try and use as few colours as possible.

How many colours did you need?

How can you be sure?

Extension – adding rules ('constraints')

Countries 4 and 5 have now become one country. Does this change the graph and the

colouring?

Country 3 does not exist anymore, and a new constraint has been introduced, that you must only have two colours. Is this possible?

Activity 2

8 kinds of animal, some eat others:

> 1 - Lion eats Baboon, Hyena, Zebra and Meerkat
>
> 2 - Baboon eats Meerkat
>
> 3 - Grasshopper
>
> 4 - Zebra
>
> 5 - Crocodile eats Grasshopper and Zebra
>
> 6 - Hyena eats Zebra, Baboon, Meerkat and Grasshopper
>
> 7 - Meerkat eats Grasshopper
>
> 8 - Cheetah eats Zebra

How would I work out a safe set of zoo allocations so no animal eats another?

Are there any problems that you can see with the model?

Extensions

Construct your own graph of a different food web. Fish or birds, for instance.

You could also draw your own 'country' like in activity 1 and draw a graph based on it.